



Impact of Covid 19- Pandemic on the Stock Market and Financial Market

Sweta Singh

Department of Management, Babu Banarasi Das University, Lucknow, Uttar Pradesh, India

singh.swetaamc@gmail.com

Received: 23 Dec 2024; Received in revised form: 25 Jan 2024; Accepted: 30 Jan 2025; Available online: 06 Feb 2025

©2025 The Author(s). Published by AI Publications. This is an open-access article under the CC BY license

(<https://creativecommons.org/licenses/by/4.0/>)

Abstract— Stock market and financial market are the two main economic sectors of Indian economy which provides an access to various resources available for raising liquidity, Capital for any public and private business establishments. They play a prominent role in the development and growth of economy of the country. Stock market is set of exchange where companies issues shares and other securities for trading and financial market is a place that enables buying and selling of financial assets to support economic growth and stability. In this study we will be studying about these two markets and their major role in economic development of the country. Besides this we will find out the adverse effects of Covid 19 pandemic on stock and financial markets and how these affects hinder the development of the economy. The main objectives of the study include Study of stock and financial market volatility and investment ratio during Covid Pandemic. Based on the objectives hypothesis has been derived. The research design of the study includes the type of research that is mainly descriptive and the data collection is purely secondary base. Various national and international journals and Government websites like has been used to collect the data. Correlation and regression statistical techniques will be used for doing the analysis of the data. The findings and the recommendation give an insight to financial advisors and policy makers for making better financial system that are robust to Global crisis.

Keywords— Covid Pandemic, deflation, Financial Market, Inflation, Stock Market

I. INTRODUCTION

Covid 19 Pandemic was officially declared worldwide by World Health Organization on March 11 2020. The outbreak has had clear significant economic impacts. Since many nations impose stringent quarantine regulations, their economic activity is severely constrained in the short term. Mass unemployment and company failures could be the pandemic's long-term effects. There will undoubtedly be difficulties for some industries, like tourism and aviation.

Covid-19 Pandemic has impacted every sector of the economy and even financial market and Stock market get adversely affected by this epidemic.

1.1 Basic Facts related to covid -19 Pandemic

As per World health organization the severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) is the infectious agent that causes the coronavirus disease 2019

(COVID-19) pandemic, which is a worldwide outbreak of the virus.

Novel coronavirus (nCoV) cases were initially identified in China in December 2019, and the virus quickly spread to other nations worldwide. As a result, WHO designated the outbreak as a pandemic on March 11, 2020, and a Public Health Emergency of International Concern (PHEIC) on January 30, 2020.

The WHO Emergency Committee on COVID-19 recommended, on May 5, 2023, more than three years into the pandemic, that the disease no longer met the criteria for a PHEIC because it was by that time well-established and continuing.

The Director-General accepted the report. The global emergency that the pandemic produced is, for the time being, over, but the epidemic itself is not. There will be a review committee to create long-term, standing

recommendations for countries on how to manage COVID-19 on an ongoing basis.

1.2 Stock market and financial market

Financial market is a type of market that provides a place where buying and selling securities takes place. Financial markets produce securities products that give investors and lenders who have extra money a return and make those funds available to borrowers who need more money.

Companies offer shares and other securities for trading on a network of exchanges known as the stock market. Over-the-counter (OTC) markets, in which investors trade securities with one another directly (as opposed to via an exchange), are also included.

Protected by regulations against fraud and other unfair trading practices, the stock market is a huge, intricate network of trading operations where shares of firms are purchased and sold. Because it makes it possible for money to flow between investors and businesses, it is essential to contemporary economies.

Sometimes examining a thing's components is the greatest way to understand how it functions.

The stock market fulfils two crucial functions. The first is to give firms money so they may finance and grow their enterprises. A corporation can spend \$10 million in capital to expand its operations if it issues one million shares of stock that sell for \$10 each at first (less any costs the company pays an investment bank to handle the stock offering). The business can avoid taking on debt and paying interest by providing stock shares as an alternative to borrowing the money required for expansion.

Giving investors, or people who buy stocks, the chance to profit from publicly traded corporations is the stock market's secondary function. (Muhammad Niaz Khan, 2024)

II. LITERATURE REVIEW

(Mahi, 2021) This study explores the effect of Covid 19 Pandemic on Islamic and Conventional stock markets from a global perspective. The Dow Jones Index and the FTSE Index are two similar pairs of conventional and Islamic stock indexes that are taken into consideration in this study. Wavelet-based multi-timescales approaches were applied to the daily data from January 21 to November 27, 2020. The findings of the study indicate that the pandemic creates identical volatility in both stock markets. It further suggests that both markets are strongly associated and tend to co-move highly during our sample period, rebutting the decoupling hypothesis of the Islamic stock market from the conventional market.

(Muhammad Niaz Khan, 2024) The study investigates the impact of Covid 19 Pandemic on the stock market volatility of a selection of developed and emerging market. The study's findings have significant ramifications for how retail investors and portfolio managers allocate their holdings during crises like COVID-19 or other unforeseen events; that is, shifts in return correlations and market volatility spillovers may necessitate rebalancing investor portfolios. Investors might also benefit from the outcomes since they show how the market behaved under extremely stressful conditions. In other words, the way markets responded to the epidemic could help with the development of risk-reduction plans. Finally, given knowledge on the net transmitters and net receivers of market shocks, policymakers can use the study's findings to create policies for market stability. Furthermore, in figuring out how they react to any Policymakers can use these findings to inform a more cost-effective and prompt response than was feasible during the COVID-19 epidemic.

(Hamza Bouhali, 2021) This research provides an updated analysis of the impact of Covid 19 daily contaminations and vaccinations on financial market by incorporating third wave observed in 2021. The important conclusions are that, with the exception of the UK and South Korea, COVID-19 contaminations continued to have a considerable impact on economies at various levels, with Russia and India seeing an even greater impact. Additionally, it discovered that COVID-19 vaccines had a significant impact on every country under study, particularly those that made up the Euro bloc. Lastly, the findings demonstrated that, with the exception of Switzerland, Russia, and India, our sample's market mood was generally positive regarding the pandemic's progression and its effects on the financial sector.

The effects of several pandemics on the global financial and economic systems have been extensively studied in the literature (Gani, 2020; Kusumahadi, 2021) (Helmi, 2021) This research can be divided into two categories: those that analyze the impact of a pandemic on financial markets (Biplap Kumar Guru, 2020) and those that look at the economic effects of a pandemic ((Aktar, 2021) The influence of COVID-19 on global stock markets is the main topic of the current paper. (Goodell, 2020).

III. DATA AND METHODOLOGY

Hypothesis of the study

H₁ (Alternative hypothesis)

Covid 19 has a significant impact on the stock market and financial market volatility

H₀ (Null Hypothesis)

Covid 19 has a insignificant impact on the stock market and financial market Volatility.

H₁ (Alternative hypothesis)

Covid 19 has a significant impact on the stock market and financial market returns

H₀ (Null Hypothesis)

Covid 19 has a insignificant impact on the stock market and financial market returns

Data presentation

The devastating health and socioeconomic effects of COVID-19 were felt everywhere in the world, however the effects differed from nation to nation based on their unique financial and economic systems. Therefore, one of the biggest obstacles for our study was establishing a suitable sample of countries. Ten nations that reflect important categories of global economies were chosen. To offer a more cohesive analysis of the behavior of the euro exchange rate, we also included the Eurozone as a whole. Additionally, in order to express the daily closing exchange rates in indirect quotations against the US dollar, we converted them all.

The CBOE (Chicago Board of Trade) Volatility Index (VIX), also referred to as the fear index in the financial markets, will be used to thoroughly examine the US case. We will also investigate the dynamic relationship between the price of gold relative to the US dollar, which is seen by investors as a safe haven, and the fresh daily vaccinations and contaminations that occur globally.

DataStream provided the daily closing price data used in the current investigation. Specifically, daily data is analyzed for the US (stock market data)India ((bse, 2021)Pakistan (KSE, 2021)the UK (100, 2021)), and China (Index, 2021).Footnote12 The study's time frame was chosen to include both (1) the pre-COVID-19 period, which ran from January 1, 2016, to December 31, 2019, and (2) the COVID period, which ran from January 1, 2020, to December 31, 2021.Note 13 The formula was used to determine the returns of each market index.

$$R_{it} = \ln \left(\frac{P_{it}}{P_{it-1}} \right)$$

Where;

R_{it} is the return on index i at the end of day t,

P_{it} is the price level of the index at the end of day t,

P_{it-1} represents the price level of the index for the previous day,

and Ln represents the natural logarithm.

(Chan)

This research examines changes in returns for several nations during the epidemic using financial time series data. Many studies have previously concentrated on the mean equation under the assumption that the disturbance term's conditional variance remained constant throughout time (Hall, 2007.)This paper's primary focus is on equity return volatility, which is a crucial factor for anyone involved in the financial markets. In particular, this study explains any conditional differences in the mean and variance of changes in equity prices by modelling any conditional heteroscedasticity that might exist in returns. Furthermore, the study in this work acknowledges that the volatility of the stock market may vary over time and be susceptible to clustering, in which periods of high or low volatility are succeeded by other periods of high or low volatility.

IV. DATA ANALYSIS

Tests to determine stationarity and the presence of ARCH effects must be performed prior to using GARCH modelling to evaluate volatility (Natarajan et al. 2014). The Phillip and Perron (P-P) and Augmented Dickey-Fuller (ADF) tests were used in this investigation.

The GARCH model's generic form is expressed as follows:

$$y^t = \mu + bx_{t+} + et$$

The simplest form of the GARCH model is the GARCH (1, 1) where the conditional variance equation is given by:

$$h_t = C + \alpha_1 \mu_{t-1}^2 + \beta_1 h_{t-1}$$

Where;

is the conditional variance, α is the ARCH term and β is the GARCH term. The time varying volatility depends on the constant μ , the lagged value of the conditional variance h_{t-1} and the lagged value of the squared errors μ_{t-1}^2 . The α ARCH term estimates the response of stock markets to shocks in returns and the β GARCH term estimates the length of time that it takes for the shock to die away. Hence, the higher the values of the α and β coefficients, the greater the persistence in volatility.

To investigate the impact of COVID 19 on returns and volatility, a dummy variable for COVID 19 was introduced, with values of 0 for the pre-COVID era and 1 for the COVID period. The GARCH model is modified by adding a COVID 19 dummy variable to both the conditional mean and conditional variance equations:

$$y_t = \mu + covid_t + e_t$$

$$h_t = C + \alpha_1 \mu_{t-1}^2 + \beta_1 h_{t-1} + \epsilon_1 covid_t$$

Finally, to assess the influence of volatility shocks on each market's returns, a separate model is estimated for each individual market taken as the dependent variable and the

rest of the markets as the regressors in the variance equation.

(Mahi, 2021)

The ECDC provides daily updates on new COVID-19 cases in each country. Figure 1 depicts the association between

each index's performance and the domestic number of new cases per million people for each of the countries in our sample. In our analysis, we do not use the raw number of new cases each day because, in most countries, the number of tests is lower on nonworking days

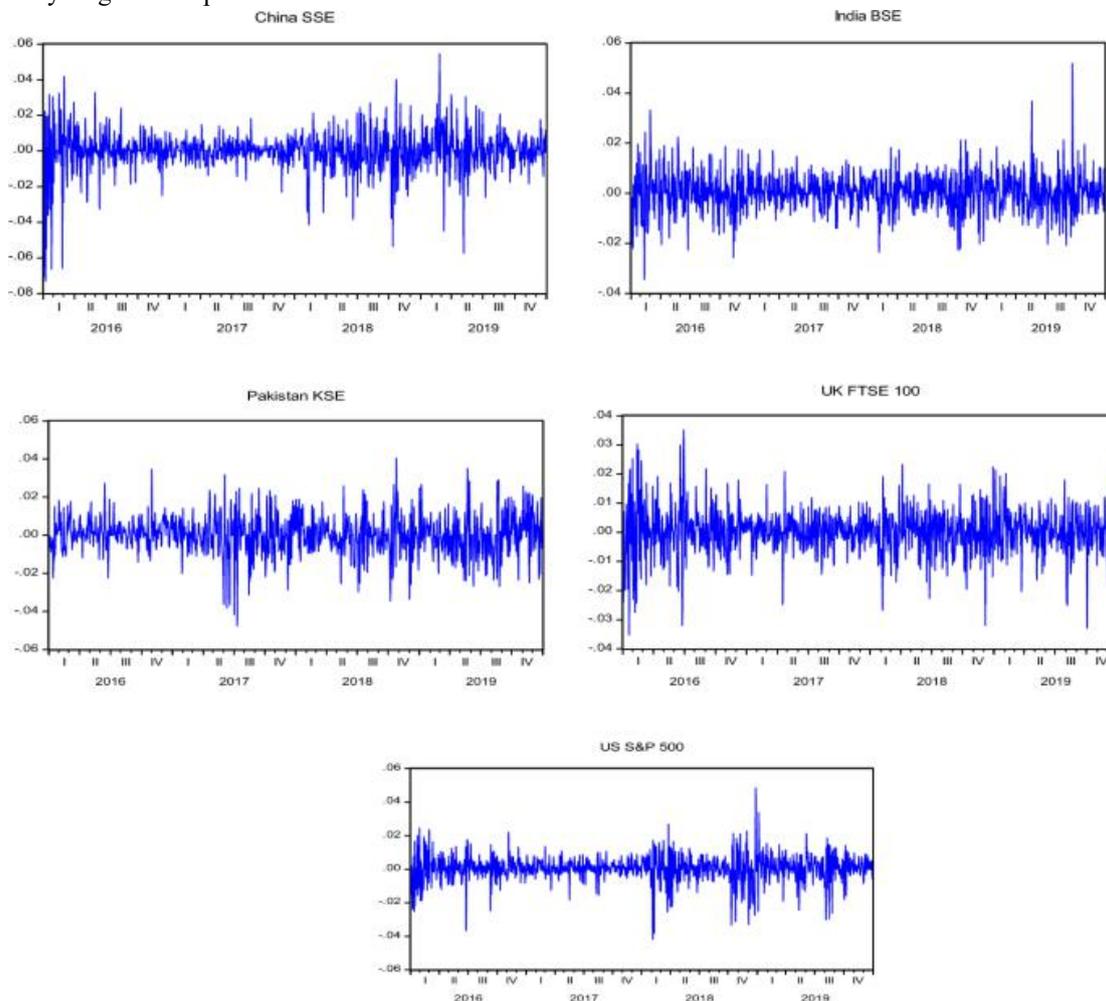


Fig 1: Time Series plot of return During Covid from Jan to Dec 2020

Source : (KSE, 2021) (Index), 2021) (100), 2021) (bse, 2021) (stock market data)

Interpretation: The data in Figure 1 show that all five markets experienced substantial levels of volatility during the epidemic. Furthermore, all of the indices exhibit

volatility clustering, implying that volatility in one period influenced future volatility

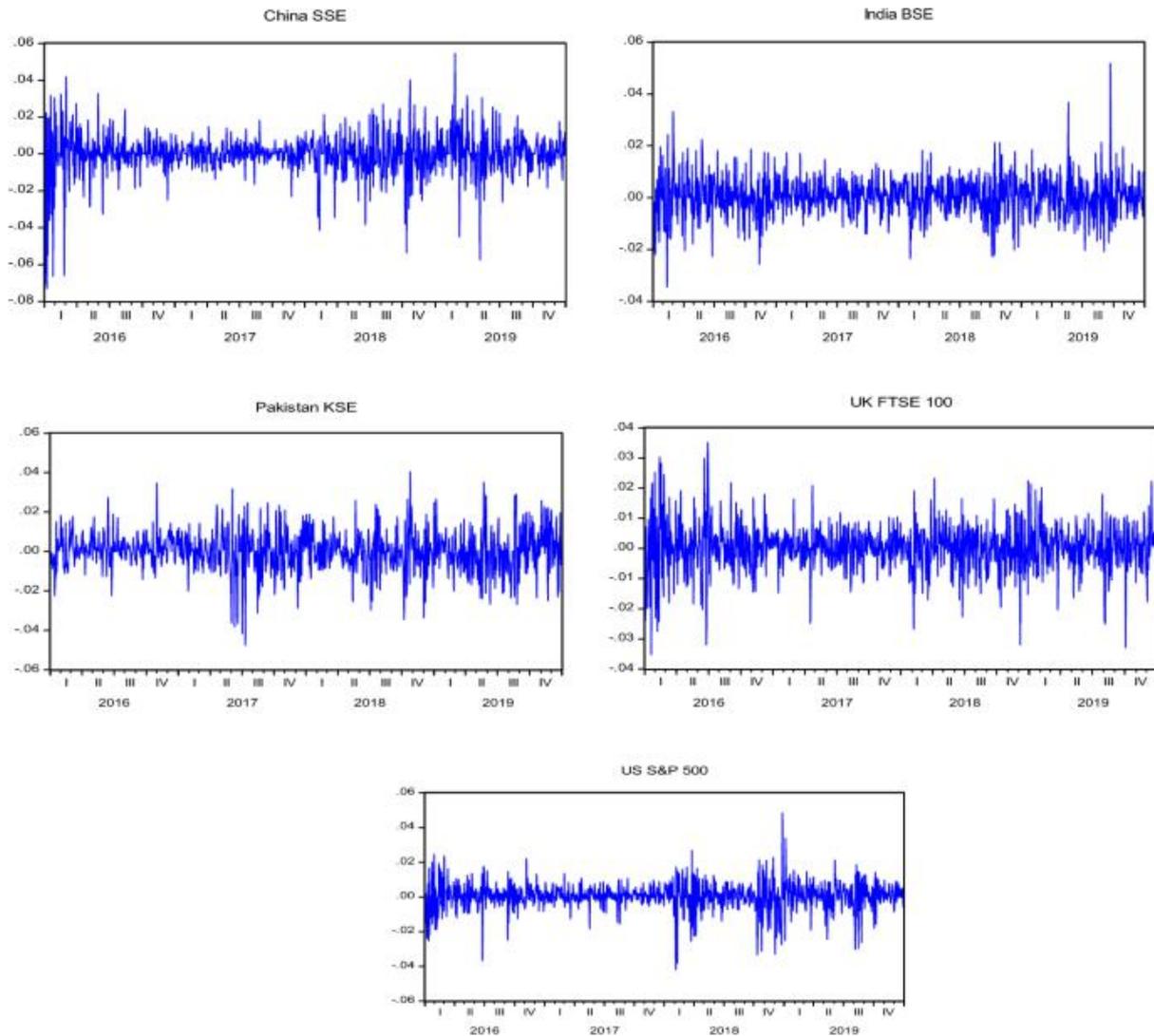


Fig 2: Time series Plot of return from Jan to Dec 2019(Before Covid)

Source: (Eur20)

Interpretation: Figure emphasizes that volatility was relatively low prior to COVID; yet, volatility clustering was also present.

Table 1

Bases	United Kingdom	United states	Italy	Germany	China	Brazil	Russia	India	Spain
Mean	-0.0277	0.0787	0.0381	0.0704	0.119	-0.038	-0.012	0.063	-0.007
Median	0.0715	0.1791	0.1527	0.0999	0.059	0.048	0.087	0.175	0.0000
Maximum	11.8513	9.3828	9.3046	11.36	6.169	16.11	9.013	9.75	8.193
Minimum	-13.2503	-11.9841	-18.367	-13.76	-9.11	-17.84	-11.25	-14.77	-15.55
Standard deviation	2.0921	2.1352	2.26	2.156	1.516	3.49	2.37	2.174	2.180
Skewness	-0.5975	-0.5526	-2.262	-0.768	-0.931	-0.88	-0.75	-1.44	-1.25
Kurtosis	12.7612	11.1900	21.31	12.21	9.282	10.26	7.61	14.26	13.74

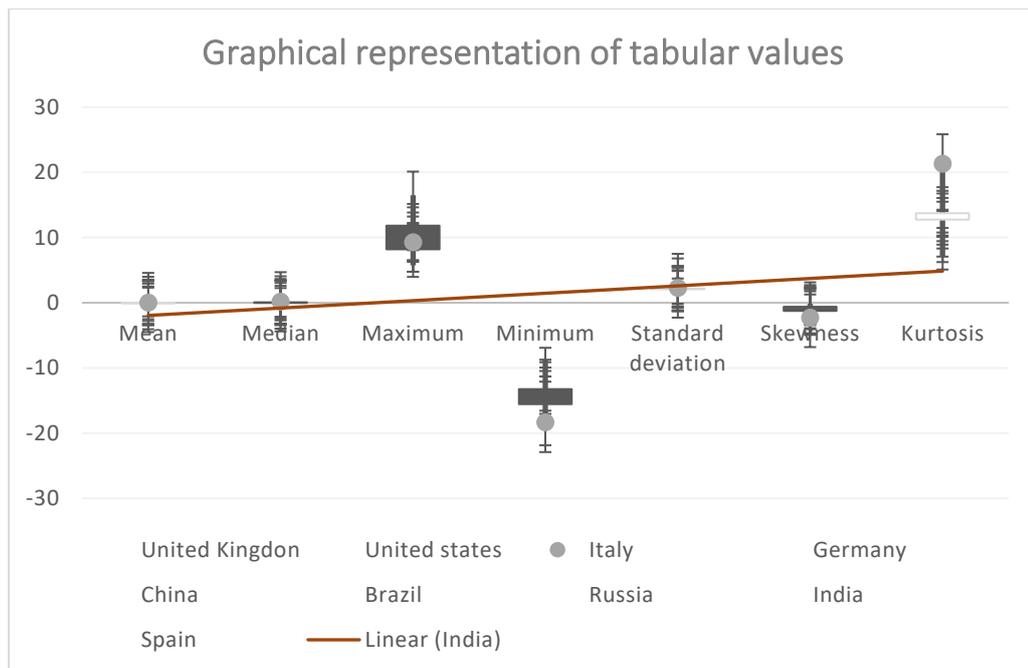


Fig 3. Representing the trend line and error bars for the values calculated

Interpretation: The average positive stock return in the United States is the highest, while Spain and the United Kingdom have the lowest positive mean. During COVID-19, shows that the United Kingdom, Brazil, Russia, and

Spain had negative average returns, while the United States, Italy, Germany, China, and India had positive returns. As illustrated in Figure 1, the markets experience a severe dip in 2020 before recovering for the balance of the year.

Table 2

	United Kingdom	United states	Italy	Germany	China	Brazil	Russia	India	Spain
United Kingdom	1.00								
United states	0.68 [0:00]	1.00 -							
Italy	0.87 [0:00]	0.66 [0:00]	1.00 -						
Germany	0.91 [0:00]	0.66 [0:00]	0.92 [0:00]	1.00 -					
China	0.38 [0:00]	0.28 [0:00]	0.28 [0:00]	0.35 [0:00]	1.00				
Brazil	0.66 [0:00]	0.75 [0:00]	0.67 [0:00]	0.66 [0:00]	0.31 [0:00]	1.00			
Russia	0.78 [0:00]	0.51 [0:00]	0.74 [0:00]	0.77 [0:00]	0.28 [0:00]	0.59 [0:00]	1.00		
India	0.61 [0:00]	0.39 [0:00]	0.56 [0:00]	0.56 [0:00]	0.45 [0:00]	0.51 [0:00]	0.49 [0:00]	1.00	
Spain	0.89 [0:00]	0.65 [0:00]	0.92 [0:00]	0.90 [0:00]	0.31 [0:00]	0.70 [0:00]	0.73 [0:00]	0.58 [0:00]	1.00

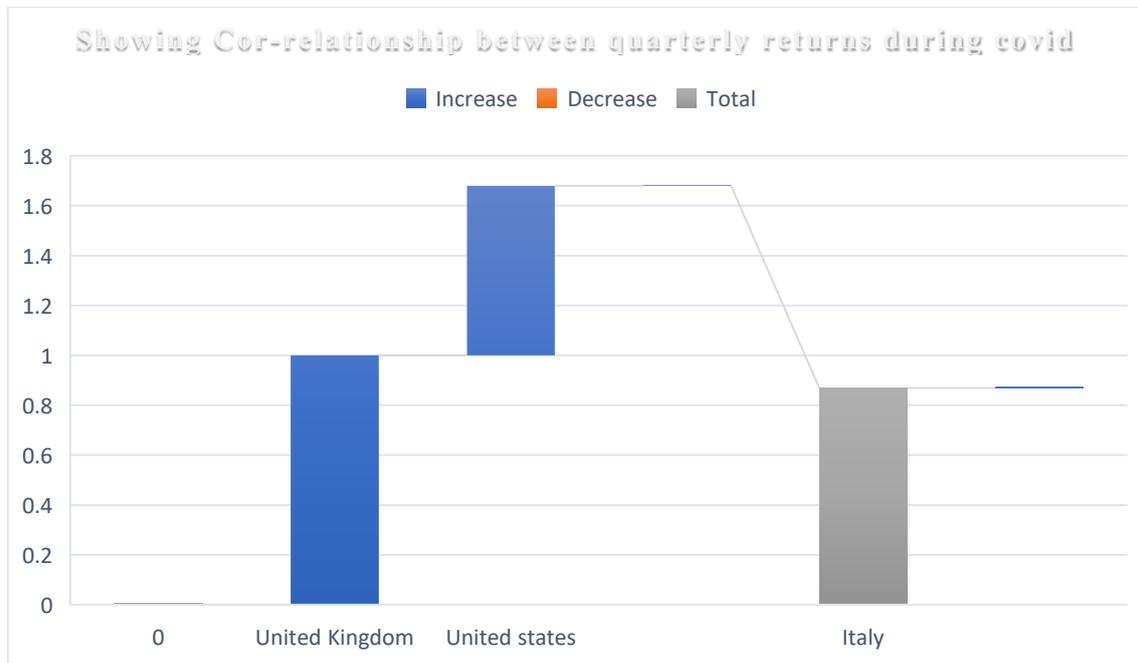


Fig 4: Representing the correlations bars among returns of all countries

Interpretation: Based on correlation matrixes values all countries are positively connected, and the pairwise correlations are highly significant. As a result, investors cannot diversify their risk by purchasing all of the country indices. Despite COVID-19, investors should still expect favorable average returns in the US and Chinese markets.

To better understand the impact of COVID-19, we estimate bad state probabilities to compare the likelihood of bad events before and during the shock, as well as between the first and second quarters of the COVID-19 period.

Table 3

Bases	United Kingdom	United states	Italy	Germany	China	Brazil	Russia	India	Spain
Mean	0.535	0.567	0.552	0.532	0.485	0.498	0.529	0.517	0.548
Median	0.530	0.567	0.552	0.5314	0.484	0.498	0.529	0.517	0.548
Maximum	0.603	0.601	0.5643	0.575	0.526	0.521	0.554	0.541	0.557
Minimum	0.489	0.5441	0.5346	0.502	0.457	0.483	0.513	0.501	0.548
Standard deviation	0.0141	0.007	0.0036	0.0089	0.0084	0.0045	0.0049	0.0049	0.0018
Skewness	0.714	0.7318	-0.786	0.7431	0.774	0.771	0.759	0.764	0.766
Kurtosis	4.661	4.732	4.865	4.750	4.824	4.829	4.801	4.811	4.822

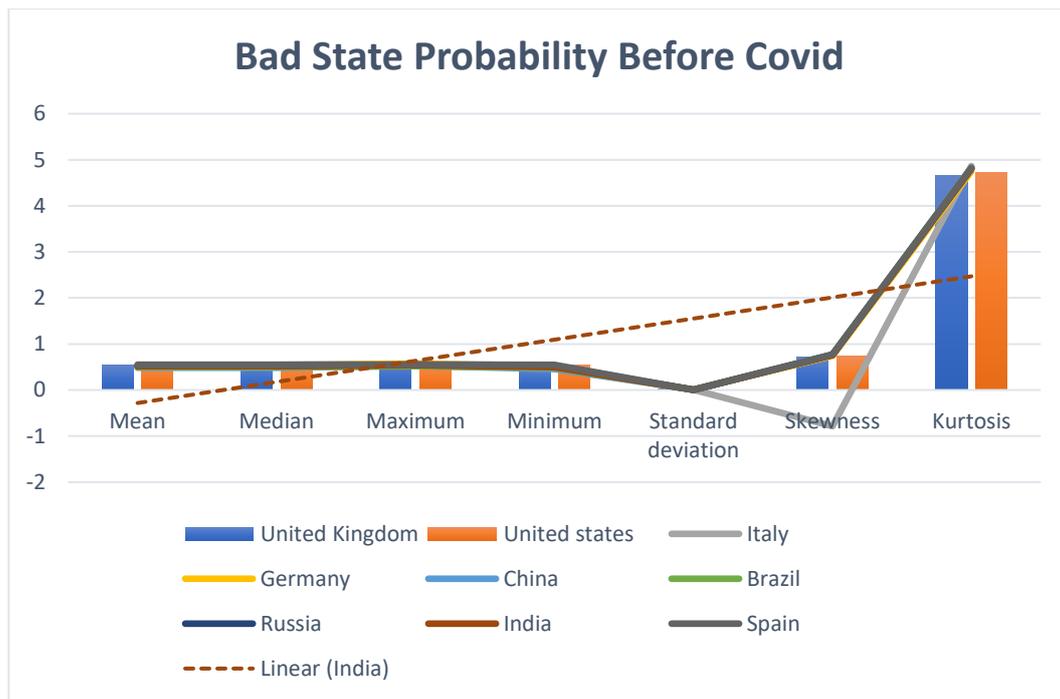


Fig 5: Representing the bad state probability trend line before covid

Table 4

Bases	United Kingdom	United states	Italy	Germany	China	Brazil	Russia	India	Spain
Mean	5.6327	5.6377	12.8640	3.2700	3.8491	4.8427	9.7593	5.0637	1.5943
Median	0.5619	0.5625	0.5345	0.5693	0.5235	0.4814	0.5090	0.5049	0.4833
Maximum	0.7908	0.6298	0.6023	0.7390	0.6000	0.5595	0.7093	0.7798	0.5709
Minimum	0.489	0.5441	0.5346	0.502	0.457	0.483	0.513	0.501	0.548
Standard deviation	0.0604	0.0495	0.0558	0.0514	0.0494	0.0208	0.1110	0.0759	0.0468
Skewness	1.8032	-1.7234	-3.1002	0.6441	-1.2085	1.0957	-2.3606	1.8215	0.2462
Kurtosis	5.6327	5.6377	12.8640	3.2700	3.8491	4.8427	9.7593	5.0637	1.5943

Interpretation: In Table 3 and Table 4 Market participants viewed the COVID-19 pandemic as a global shock, which reflected in their negative expectations for market behavior. The impact of the pandemic was evident globally on the major equity markets, which generally saw a noticeable increase in bad state probabilities. We find that, on average, adverse state probability have increased in the UK, Germany, Brazil, and India compared to the pre-COVID-19 period. On the other hand, terrible state probability is declining in the US, Russia, China, Italy, and Spain.

As per the analysis of the stock market returns before and during pandemic our study concludes that Alternative Hypothesis is true “Covid 19 has a significant impact on the stock market and financial market returns.

Stock market Volatility estimate

To analyze the stock market and financial market volatility we use GARCH volatility test. GARCH means Generalized Autoregressive Conditional Heteroskedasticity. It considers the volatility be considering past returns and past volatility.

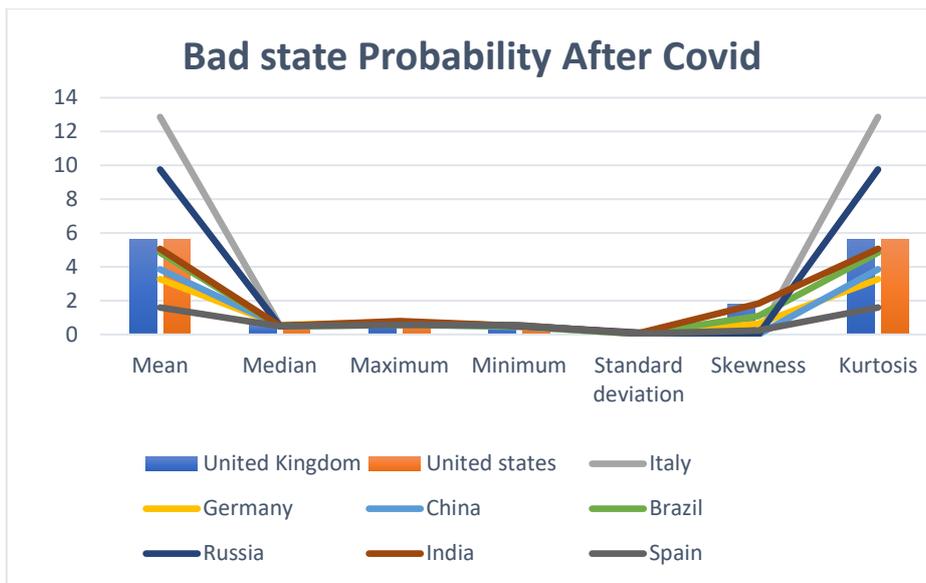


Fig 6: Representing the bad state probability trend line after Covid

Table 5

	United Kingdom	United states	Italy	Germany	China	Brazil	Russia	India	Spain
Mean	1.7663	1.7979	2.5892	1.8007	2.4452	5.3868	3.120	1.8084	1.8911
Median	0.7329	0.4883	1.6719	1.1545	1.6705	3.3963	1.938	1.0192	1.3203
Maximum	152.7427	315.4359	110.2596	81.2990	22.6002	212.1903	81.76	130.17	70.6085
Minimum	0.1561	0.1058	0.3961	0.2977	0.4427	0.9992	0.390	0.3148	0.4380
Standard deviation	7.0897	12.1587	5.3752	4.1293	2.5897	11.5398	4.727	6.2353	3.6070
Skewness	15.0822	18.0271	12.8925	11.9263	3.6957	11.4057	8.926	13.860	13.0494
Kurtosis	264.4052	367.154	206.187	175.2792	20.428	163.164	114.41	223.40	203.66

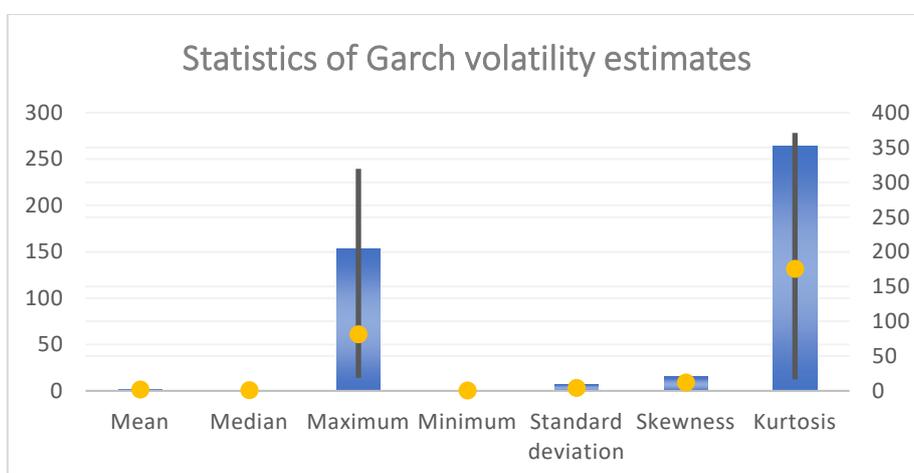


Fig 7: Representing the Garch volatility estimates of Stock and financial market

Interpretation: Table 5 and chart gives the suggested model's conditional variance and GARCH conditional volatility descriptive statistics. In our model, the conditional variance is greater than the GARCH volatility, even though they are equal in a regular GARCH. This demonstrates that, compared to the typical situation, the estimated risk predicted by the suggested model is larger, with Brazil showing the greatest level. Based on the volatility test and analysis we found that Alternative Hypothesis is true because Covid 19 has a significant impact on the stock and financial market Volatility.

V. FINDINGS OF THE STUDY

1. Financial markets experienced substantial levels of volatility during the epidemic
2. Market volatility was relatively low prior to COVID 19
3. The average positive stock return in the United States is the highest, while Spain and the United Kingdom have the lowest positive mean
4. Based on correlation matrixes values all countries are positively connected, and the pairwise correlations are highly significant.
5. The impact of the pandemic was evident globally on the major equity markets, which generally saw a noticeable increase in bad state probabilities.

VI. CONCLUSION OF THE STUDY

This study sheds light on how the COVID-19 pandemic has affected the volatility of stocks and financial markets in both developed and emerging nations. The pandemic was the period with the lowest daily returns for all sample markets, according to an analysis of daily closing price data from January 1, 2016, to December 31, 2021. There were notable drops of 14.1% and 12.8% in the US and Indian markets, respectively. Standard deviation levels suggested heightened volatility, whereas negative skewness and high kurtosis reflected higher uncertainty and risk. Market return correlations increased during the crisis, indicating increased interconnectedness. Both recent and historical events had a significant impact on market volatility, according to the results of the GARCH (1,1) model, with persistent and prolonged volatility being noted. In line with findings by Yousef (2020) and Chaudhary et al. (2020), the model's inclusion of COVID-19 as an exogenous dummy variable demonstrated a considerable favorable influence on the majority of markets. However, the impact varied across markets due to differences in the timing and severity of the pandemic, as well as varying investor perceptions of market resilience. Market reactions can have also been impacted by sector-specific performance. For investors, portfolio

managers, and legislators, these insights are essential. When reallocating portfolios during crises, investors need to take into account shifts in return correlations and volatility spillovers. Risk reduction is aided by an understanding of how markets behave under severe stress. By identifying important markets that transmit or receive shocks, policymakers can use these results to improve market stability and provide prompt responses to future crises. Planning well might lessen the financial effects of unforeseen circumstances like COVID-19.

REFERENCES

- [1] 2019, European Centre for Disease Prevention and Control.
- [2] Biplap Kumar Guru, A. D. (2020). pages 529–558. *Economic Journal* 119 (2009) , 158-171.
- [3] Bradley, C. (2024). Impact of COVID-19 on jump occurrence in capital markets. *humanities and social sciences communications* .
- [4] Gani, I. R. (2020). Impact of COVID-19 Outbreak on the Stock Market: An Evidence from Select Economies. *Sage Journals*.
- [5] Hamza Bouhali, A. D. (2021). COVID-19 impacts on financial markets: Takeaways from the third wave. *Russian Journal of Economics*
- [6] Helmi, M. H. (2021). Time-varying effects of the COVID-19 pandemic on stock markets and economic activity: evidence from the US and Europe. *Empirica*, 529–558.
- [7] IMF. (2020). *GDP data*. <http://www.imf.org>.
- [8] implementation, M. o. (2021). *Data visualization*. <http://www.mospi.gov.in>.
- [9] Kusumahadi, T. A. (2021). Impact of COVID-19 on Global Stock Market Volatility. *The Journal of Economic Integration* 2021 March;36(1) , 20-45.
- [10] Mahi, M. B. (2021). Impact of COVID-19 pandemic on stock markets: Conventional vs. Islamic indices using wavelet-based multi-timescales analysis. *The North American Journal of Economics and Finance*, volume 28.
- [11] Muhammad Niaz Khan, S. G. (2024). The impact of the COVID 19 pandemic on stock market volatility: evidence from a selection of developed and emerging stock markets. *SN BUSINESS AND ECONOMICS* , VOLUME 4.